BTEC Assignment Brief

Qualification	Pearson BTEC International Level 3 Diploma in Building Services Engineering Pearson BTEC International Level 3 Extended Diploma in Building Services Engineering
Unit number and title	Unit 21: Building Services Science
Learning aim(s) (For NQF only)	Learning aim B: Explore the characteristics of electrical supply systems applicable to building services systems
Assignment title	**Electrical Supply Systems in Building Services**
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	You are working as a trainee engineer in a company which specialises in design and installation of building services. The senior management is reviewing the induction and training programme for the new employees and are making number of changes to improve it. One such change is to produce reference documents which contains all the required scientific details including sample calculations. You have already produced a document relating to heat transfer and combustion which was very well received by the management as well as by the trainees. Hence, the management considers that you are the appropriate person to undertake the production of next set of documents relating to electrical principles.
Task	Produce the reference documents which will be called 'Building Science in a Box - 2' as detailed below: **a)** Number of posters to demonstrate scientific principles, and their applications, relating to: • Direct Current (DC) and Alternating Current (AC) • Generation of electricity at local and national level • Working of transformers • Role of transformers in the transmission and distribution of electrical power. Please provide examples. • How electricity is transmitted to the buildings? **b)** Produce an illustrated poster justifying the use of transformers right from generation through transmission to distribution, where the end user is a: • Household • Workshop where portable equipment will be used • Commercial premises where three-phase supply will be required.

	c) Sample calculations relating to the following. Please include a step-by-step guide for two of the examples as well. • Conduction relating to voltage, current, resistance, energy, power • Calculations relating to voltage and current during generation, transmission and distribution **d)** A review of (a), (b) and (c) considering the significance of the use of transformers in the generation and distribution of electricity.
Checklist of evidence required	Number of posters as agreed with the assessor using a suitable software. A well referenced word-processed document, using a suitable referencing style such as Harvard. Diagrams/sketches/illustrations to support the calculations. Illustrations/sketches to support the discussions. Use of credible and range of resources.

Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria, you must show that you are able to:
B.P3	Explain the principles of generation, transmission and distribution of electrical energy.
B.M2	Assess the use of different voltages during generation, transmission and distribution of electrical energy.
B.D2	Justify, for a given scenario, the use of transformers in the transmission and distribution of electrical power, with reference to generation and end use.

Sources of information to support you with this Assignment	Burberry, P, *Environment and Services (Mitchells Building Series),* (8th edition), Routledge, 2015, ISBN 9781138167780. This book explains principles of services installations and environmental considerations and is relevant to the content of this unit. Greeno, R, *Building Services Handbook* (8th edition), Routledge, 2015, ISBN 9781138805637. As the name suggests, a handbook covering all aspects of building services in a concise manner. Floyd T. *Electric Circuit Fundamentals*, 8th Edition, Pearson, 2009 ISBN 9780135072936 This book provides practical coverage of electrical circuits

	supported with number of illustrations. McMullan R. *Environmental Science in Building*, 7th Edition Palgrave Macmillan, 2012 ISBN 9780230290808 The most recognised book which is considered a credible text regarding building science. **Journals** *Building Services Engineering Research & Technology (BSERT)*, Sage Publishing This is CIBSE's quarterly journal containing useful research relevant to all aspects of building services engineering. http://journals.sagepub.com/home/bse *P & HE Journal,* Chartered Institute of Plumbing and Heating Engineers (CIPHE) This is CIPHE online journal which covers a broad range of areas relating to plumbing and heating. http://www.ciphe.org.uk/professional-members/publications/ **Websites** http://www.cibse.org/ This is the website of Chartered Institute of Building Services Engineers (CIBSE) which is the professional body for building service engineers. The website contains information about the codes, products and industry updates. http://www.modbs.co.uk/ This is the website of Modern Building Services (MBS) covering a wide range of building services engineering sectors.
Other assessment materials attached to this Assignment Brief	*N/A*